

**ABSTRACT**

To provide a logical operation circuit which can perform a logical operation using a ferroelectric capacitor and a logical operation method. A logical operation circuit 1 has a ferroelectric capacitors CF and a transistor MP. The ferroelectric capacitor CF can retain a polarization state P1 ( $y = 1$ ) or P2 ( $y = 0$ ) corresponding to first operation target data  $y$ . In an operation process, a first terminal 3 of the ferroelectric capacitor 1 is precharged to a source potential Vdd, and a potential corresponding to second operation target data  $x$ , that is, a ground potential GND ( $x = 1$ ) or the source potential Vdd ( $x = 0$ ), is given to a second terminal 5 of the ferroelectric capacitor via a bit line BL. When the threshold voltage  $V_{th}$  of the transistor MP is set properly, the transistor MP becomes on or off (on, on, on, off) depending on the combination of  $x$  and  $y$  (0-0, 0-1, 1-0, 1-1).